

REMARKS

Favorable reconsideration and allowance of this application are requested.

1. Discussion of Amendments

By way of the amendment instructions above, the pending claims have been amended so as to further clarify the same. In this regard, the Examiner's helpful suggestions regarding claim clarity have been adopted so that the rejection advanced under 35 USC §112, second paragraph may be withdrawn.

In addition, claims 1-9 and 22-23 have been canceled while independent claim 10 has been amended so as to require the presence of an antioxidant and a processing stabilizer as supported by original claim 12 and paragraph [0055] of the specification. Moreover, the carboxylic acid hydrazide, the metal salt of a hydroxy polycarboxylic acid, the antioxidant and the processing stabilizer are also specified as was defined originally in claims 3, 4, 13 and 14.

Claims 13, 14 and 21 have been amended so as to correspond to prior claims 5-7.

Claim 24 has been simplified as a molded product formed of the composition as recited by claim 10.

Therefore, following entry of this amendment, claims 10-21 and 24-26 will remain pending herein for consideration.

2. Response to 35 USC §112 Rejections

The amendments made to the pending claims herein are believed to address all issues raised under 35 USC §112, second paragraph. Accordingly, withdrawal of such rejections is in order.

3. Response to 35 USC §§102(b) and 103(a) Rejections

The Examiner has rejected claims 1-4, 6-21 and 24-26 under 35 USC §102(b) as allegedly anticipated by, or alternatively under 35 USC §103(a) as allegedly obvious over WO 0105888 to Harashina (USP 6,753,363 being used as an English translation). Claims 5, 22 and 23 attracted a separate rejection under 35 USC ;103(a) as allegedly obvious over Harashina. As will become evident from the following discussion, Harashina does not anticipate or render obvious the presently claimed invention.

(A) Harashina

Harashina discloses:

"A polyacetal resin composition comprising a polyacetal resin, a flame retardant, and a basic nitrogen-containing compound, wherein the flame retardant comprises a phosphorus-containing compound and an aromatic compound which accelerates flame retardation in association with the phosphorus-containing compound, wherein the proportion of the phosphorus-containing compound is 1 to 500 parts by weight per 100 parts by weight of the aromatic compound, and the total amount of the phosphorus-containing compound and the aromatic compound is 1 to 100 parts by weight, and wherein the proportion of the nitrogen-containing compound is 0.01 to 80 parts by weight per 100 parts by weight of the polyacetal resin" (claim 1).

Regarding the basic nitrogen-containing compound, Harashina describes:

"The second characteristic of the present invention resides in that not only the flame retardancy and self-extinguishability but the flame retardancy of the polyacetal resin is multiplicatively improved and the stability is further enhanced by the combined use of the flame retardant and a basic nitrogen-containing compound" (column 22, lines 23-28)

Further, regarding the optional additives, Harashina states:

"Further, to the resin composition may be added a colorant (e.g, dyes, inorganic and organic pigments), a weather (light) resistant stabilizer, a heat stabilizer, a mold releasing agent, a nucleation agent, an antistatic agent, a surfactant, an electroconducting agent, a slip agent [e.g., silicone oil, silicone resin, fluororesin, polyolefinic resin, poly(C₂₋₄) alkylene glycols)], a fluorescent whitening agent, an inhibitor for inhibiting a phosphoric acid derivative from being formed from a phosphine ... impact resistance improvers (e.g., core/shell polymers constituted of polyurethane or rubbery core polymers and glassy shell polymers, particulate silicone elastomers, olefinic elastomer).

Particularly, the use of a heat stabilizer improves the heat stability of polyacetal. Exemplified as the heat stabilizer are alkaline or alkaline earth metal-containing compounds [particularly, organic carboxylic acid metal salts (calcium acetate, calcium citrate, magnesium stearate, calcium stearate, calcium 12-hydroxystearate), metal oxides (e.g., magnesium oxide, calcium oxide), metal hydroxides (e.g.,

magnesium hydroxide, calcium hydroxide), metal carbonates], silicates (e.g., magnesium silicate, aluminum silicate), zeolite, and hydrotalcite.

Of these, alkaline or alkaline earth metal-containing compounds (particularly, magnesium compounds, calcium compounds, and other alkaline earth metal—containing compounds), zeolite, and hydrotalcite are preferred." (column 35, line 37 to column 36, line 9).

Regarding advantages that purportedly ensue from the compositions of Harashina, it is described that:

"[S]ince a flame retardant constituted of a phosphorus-containing compound and the specific aromatic compound, and a basic nitrogen-containing compound are used in combination, it is made possible to give high flame retardancy and stability to a polyacetal resin. It is also possible to make, without adversely affecting its inherent characteristics a polyacetal resin highly flame retardant and stabilized by adding a small amount of the flame retardant. The heat stability (or fusion stability upon molding) can be further improved by adding additives." (column 37, line 63 to column 38, line 6)

(B) Comparison of the present invention and the reference

One of the features of the presently claimed invention that should not be overlooked is the fact that a specific combination of a polyacetal resin, a specific aldehyde emission-inhibiting composition comprising a specific carboxylic acid

hydrazide and a metal salt of a specific hydroxy polycarboxylic acid (a specific hydroxy polycarboxylate), a specific antioxidant and a specific processing stabilizer are provided.

Harashina fails to disclose or suggest such a specific combination of components, in particular a combination of the specific aldehyde emission-inhibiting composition comprising a specific carboxylic acid hydrazide and the specific hydroxy polycarboxylate, and the specific processing stabilizer.

That is, although Harashina discloses the carboxylic acid hydrazide as the basic nitrogen-containing compound, the carboxylic acid hydrazide is only exemplified as one example among many basic nitrogen-containing compounds. Furthermore, the basic nitrogen-containing compound of Harashina is a component for improving the flame retardancy and self-extinguishability by the combined use of the flame retardant. More specifically, the basic nitrogen-containing compound of Harashina is vastly different from the aldehyde emission-inhibiting composition as claimed herein in terms of its function.

Although Harashina discloses calcium citrate as the heat stabilizer, it is only an optional additive in the Harashina compositions. Moreover, calcium citrate is but one example of alkaline or alkaline earth metal-containing compounds. Harashina is silent on the hydroxy polycarboxylic acid as preferred heat stabilizer, and the hydroxy polycarboxylate is not used in Examples.

Since Harashina directs to improve flame retardancy and thus fails to teach or suggest aldehyde emission, Harashina self-evidently fails to disclose the combination of the carboxylic acid hydrazide and the hydroxy polycarboxylate, and the technical meanings of the combination in aldehyde emission.

With regard to the processing stabilizer, Harashina discloses a slip agent such as silicone oil, silicone resin, fluororesin, polyolefinic resin, poly(C₂₋₄ alkylene glycols).

However, the slip agent of Harashina is an optional additive and is not used in any of the Examples.

Accordingly, Harashina fails to disclose the specific combination of components as defined by the presently pending claims. Such claimed specific combination of components would likewise never have been predicted from Harashina.

In this regard, applicants note that the present invention also shows unexpected results. That is, since the resin composition of Harashina comprises a polyacetal resin, a flame retardant, a basic nitrogen-containing compound, a heat stabilizer and an antioxidant, the composition must necessarily have a high formaldehyde emission and low processing stability. In contrast, since the resin composition of presently claimed invention comprises a polyacetal resin, a specific aldehyde-inhibiting composition, a specific antioxidant and a specific processing stabilizer, the resin composition efficiently can inhibit or suppress formaldehyde emission and has high processing stability. Thus, such unexpected results of the present invention would never be predicted from Harashina.

Withdrawal of all rejections advanced under 35 USC §§102(b) and 103(a) is therefore in order.

HARASHINA
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4. Fee Authorization

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /Bryan H. Davidson/
Bryan H. Davidson
Reg. No. 30,251

BHD:dlb
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100